RECLAMATION
Managing Water in the West

December 2006
Mid-Pacific Region

Conservation Connection

Mid-Pacific Region & Partners Fund Millions in Water Use Efficiency Projects

During fiscal year 2006, Reclamation's Mid-Pacific Region and more than 50 water purveyors partnered to fund approximately $8 million in water use efficiency (WUE) projects. These partnerships resulted from competitive grants based on cost-shared programs. Reclamation has historically funded WUE projects geared towards decreasing water demands in order to meet agricultural, growing urban and environmental needs.

In 1997, Reclamation created the Water Conservation Field Services Program (WCFSP), designed to encourage water conservation through financial and technical assistance. The WCFSP provides cost share funding to Reclamation contractors for the implementation of best management practices identified in their water conservation plans. Over the last several years Reclamation has given hundreds of small grants to agricultural and urban contractors for projects such as canal lining and piping, irrigation scheduling, system delivery, system modernization, measurement and residential rebate programs. During fiscal year 2006, the Mid-Pacific Region awarded 25 agricultural, 7 urban and 3 educational grants through the WCFSP (Table 1, page 2).

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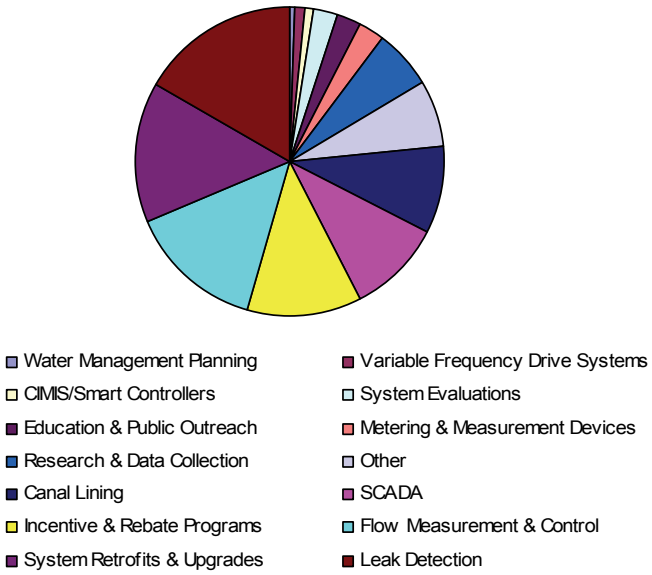
Federal Dollars Spent on Various WUE Projects in FY 2006



In addition to the WCFSP, the Mid-Pacific Region, in cooperation with the Lower Colorado Region, administered WUE grants through the CALFED Bay-Delta Program, a collaborative effort between state and federal agencies for better water management and ecosystem restoration of the Bay-Delta. All applicants had a defined relationship to the California Bay-Delta and addressed one or more of the CALFED objectives including ecosystem health, water supply reliability and water quality. Urban and Agricultural projects were funded (Table 2, page 3), and all projects have measurable, statewide benefits to the California Bay-Delta.

Reclamation's WUE grants are advertised on www.grants.gov. Currently, proposals are being accepted for the 2007 WCFSP. Visit www.grants.gov or contact your Area Office Representative for more information.

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Performance Measures for Water Management Practices

By Sheri Looper[1], Avra Morgan[2], Mark Roberson[3] and Tracy Slavin[1]

Reclamation, in cooperation with the California-Bay Delta Water Use Efficiency Program (WUE), recently developed performance measures to quantify the project level benefits of water management actions. Performance Measures are ways to compare pre- and post-project water use data to quantify project benefits, determine effectiveness of water management efforts and summarize the overall effectiveness of WUE grant programs. Performance Measures are now required for Reclamation's water conservation grants and cooperative agreements.

Quantification of project benefits is an important means of determining the relative effectiveness of various water management efforts and for improving program level implementation. Quantifying project benefits will help prioritize expenditures and determine the most cost effective means of using limited funding resources. In the water management industry, one needs to analyze the cost versus the benefits of projects that focus on water demand management to determine which practices, in which situations, result in the best use of funding. In addition, decision makers need to determine whether the problems associated with limited water resources can be best addressed by concentrating funding on reducing water demands or increasing water storage.

Currently quantifiable information from WUE projects is limited, and varying measurement methodologies make it difficult to compare benefits from program to program, or location to location. Standardizing quantification methods for measuring WUE benefits with performance measures will allow comparison of the results from varying grant programs such as Water 2025, the Water Conservation Field Service Program and the CALFED WUE Program. These programs, all with overlapping goals and objectives, have collectively spent over $80 million in WUE projects in the last 5 years.

Performance measures were developed for a number of water management projects, including water measurement, canal lining and piping, system automation, spillage reduction, drainwater reuse, water marketing and water banking. Use of these performance measures will help standardize quantification methods and facilitate comparability throughout the water management industry. Output measurements will be expressed in a quantifiable manner, which will give water managers real data to use when evaluating the financial feasibility of future projects.

Reclamation has initiated this process with the understanding that performance measures are a work in progress that will be further refined as monitoring programs are implemented and project results are analyzed. There is no "one-size fits all," and the performance measures are intended to provide water purveyors with examples of some acceptable measures. In some cases baseline information may not be available and methods other than those suggested may be more suitable for certain projects.

It is Reclamation's desire that other local, state and federal efforts related to WUE work with Reclamation in this effort in order to better assess the benefits and costs derived from implementing water use efficiency practices.

To view the complete Performance Measures Document, visit http://www.usbr.gov/mp/watershare/documents/PerformanceMeasures final 3-2.pdf.

1. *Bureau of Reclamation, Mid-Pacific Region*
2. *Reclamation Contractor, CALFED Bay-Delta Authority*
3. *Bureau of Reclamation, Denver Office*

KRCD Makes Water Management Easy

The Kings River Conservation District (KRCD) created a handy online tool to assist growers with their irrigation and water management needs. KRCD developed "Agline," an online resource that gives crop water use for the KRCD service area. Agline provides water use information for over 30 different crops including alfalfa, cotton, melons, grapes and almonds. The crop information includes water use for the last 7 days, predictions for the next 7 days and total use to date. Information is updated every Friday, and water use data is based on CIMIS and the Et_o of grass.

Agline also offers a powdery mildew index calculator and a run time calculator to calculate run times for micro irrigation systems.

Visit Agline at http://www.krcd.org/water/water_management/agline/

Should You Calibrate Your Acoustic Meters?

By Bryce White

Recently the Irrigation Training and Research Center (ITRC) at California Polytechnic State University, San Luis Obispo checked the accuracy of some Acoustic Doppler meters.

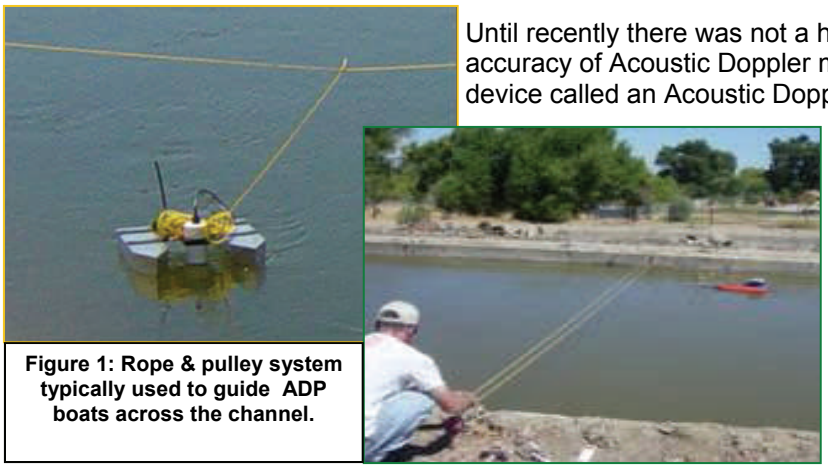

Figure 1: Rope & pulley system typically used to guide ADP boats across the channel.

Until recently there was not a handy tool to use when verifying the accuracy of Acoustic Doppler meters in the field; however, there's a new device called an Acoustic Doppler Profiling (ADP) boat. It looks like a small model boat and is pulled across a channel by hand (Figure 1). The boat measures the channel cross sectional area at the same time it measures the flow velocity, so it can accurately measure the flow volume.

To verify how well the boats work, ITRC conducted testing at Patterson and Merced Irrigation Districts. The tests compared the flow rate readings of an ADP boat to the flow rate measured by a Replogle flume (Figure 2). The overall discrepancy was less than 1%, confirming it is reasonable to use ADP boats for calibration of other acoustic meters.

Acoustic Doppler meters are capable of providing extremely accurate flow measurement, but they only measure the velocity of the flow within the sonar beam (Figure 3). The sonar beam usually only sees a portion of the channel to find the average velocity. Positioning the meter so the beam is in the best position is important for accurate measurement.

As well, Acoustic Doppler meters do not measure the channel cross section. Normally the known channel dimensions are entered into Acoustic Doppler meters software during the set up. However, the exact channel dimensions can be difficult to determine if the channel is irregular, has an earth bottom or heavy sediment. Channel dimensions can also change over time. Without proper field calibration of Acoustic Doppler meters, the potential for measurement error is significant, even though the unit is working perfectly.

Figure 2: The location of the Telog Water Level Monitoring station installed upstream of the flume to collect discharge data.

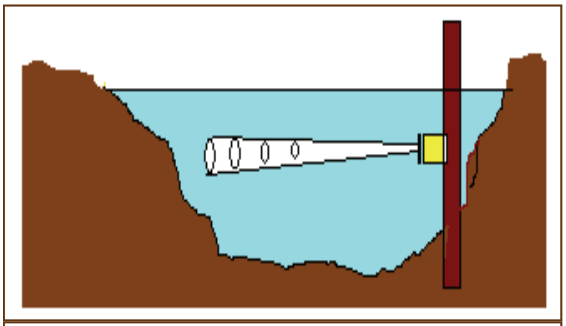

Figure 3: Typical side mounted ultrasonic meter Installation.

The ADP boat makes direct measurements of the cross sectional area and checks all points within the channel for flow velocity. This makes it a beneficial tool to calibrate other acoustic meters in the field. Once the actual flow volume has been determined, new channel dimensions and factors can be entered into the Acoustic Doppler meters software to correct the readout.

For more details, visit the ITRC online report 06-003 titled "Non-Standard Structure Flow Measurement using the Flow Rate Indexing Procedure" at http://www.itrc.org/reports/reports.htm.

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Table 1: Projects awarded under the WCFSP, FY 2006

Award Recipients	Project Description
Alpaugh ID	Installation of deep well meters
Cal Poly	Technical Assistance, including on-farm irrigation system evaluations and Research Programs for Federal Water Contractors
Casitas Municipal WD	Agricultural water audit program
City of Roseville	(1) Utility Exploration Center mini exhibit; (2) LivingWise Program for community awareness; (3) Irrigation controller replacement program
City or Santa Barbara	Production of a sustainable landscaping television series and website
Columbia Canal Company	Modernization of canal operation through installation of long-crested weirs
Colusa Drain MWC	Regional water management planning
Corning WD	Supervisory Control and Data Acquisition (SCADA) system installation
Del Puerto WD	Installation of Doppler meters
Delano-Earlimart ID	Expansion of district website to provide real-time data for on-farm water conservation and management programs
El Dorado ID	Installation of Agricultural-Urban weather stations; Test Agricultural soil moisture measurement devices; monitor market awareness for SMART controllers
Fair Oaks Water District	Installation of a conservation reporting module to identify high water users and trouble areas
Firebaugh Canal WD	Canal lining
Fresno ID	SCADA system installation
Friant Water Authority	Regional water management planning
Friant Water Authority	Canal automation
Goleta WD	Data logger demonstration project to monitor residential water use and a mobile water conservation van demonstration project
James ID	Install permanent flow meters at turnouts
Kern-Tulare WD	SCADA system installation
NW Kern RCD	On-farm irrigation system evaluations to improve WUE
Orange Cove ID	Turnout rehabilitation: waterproofing the interior sump surface to prevent leakage
Orland-Artois WD	SCADA integration project
Placer County Water Agency	High-efficiency clothes washer and ultra-low flush toilet rebate program
Placer Nature Center	Water conservation education
Reclamation District 108	Reclamation/Basinwide water management plan cooperative water measurement study
San Juan WD	Water conservation rebate and irrigation improvement reimbursement program
San Luis Canal Company	Modernization of canal operation through installation of long-crested weirs
Santa Ynez River WCD	Ultra low flow toilet rebate program
Saucelito ID	Installation of variable frequency drive systems
Shafter-Wasco ID	Outlet replacement project
Solano ID	SCADA system installation
Tehama-Colusa Canal Authority	Installation of 5 Doppler meters at canal laterals
Tranquility ID	Study the benefits of connecting multiple districts' canals. Potential to decrease evaporation and seepage
Turtle Bay Exploration Park	Water conservation education
Westside WD	A cost share, landowner incentive program for on farm efficiency improvements

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Table 2: Projects awarded under the CALFED Water Use Efficiency Grants Program, FY 2006

Award Recipients	Project Description
City of Newport Beach	Watershed rehabilitation & protection program. Includes irrigation system upgrades in residential & commercial landscapes in high water use & high run-off areas
Contra Costa Water District	Residential Landscape Survey Program aimed to reduce chemical run-off & increase customer awareness
East Bay MUD	Aqueduct lead detection study. In-service leak detection on untreated & treated water aqueducts
Eastern Municipal Water District	Landscape incentive program for new housing developments. Install California friendly landscapes in the housing development's front yards. Incorporates recommendations from California State Assembly Bill 2717
Firebaugh Canal Water District	Canal lining. Estimated to save 1,940 AF/year of recoverable flows in addition to improving water quality
Olivenhain Municipal Water District	Rebate program for weather based landscape irrigation controllers
Panoche Water District	Canal seepage reduction through the use of vibration soil compaction on earth banks. Estimated to reduce seepage by 850/AF/year
Reclamation District 108	Construction of 30 long crested weirs and 30 ramp flumes for water level control and measurement. Estimated to save 3,000 AF/year of recoverable flows in addition to improving water quality
Richvale Irrigation District	Installation of Doppler measurement devices for system control and measurement. Estimated to save 900 AF/year of recoverable flows
San Francisco PUC	Installation of electronic leak detection devices throughout the water transmission & distribution system to reduce water loss through leak detection
San Luis Delta Mendota Water Authority	Add SCADA to 8 check structures between San Luis and Mendota. Estimated to save 40,000 AF/year of recoverable flows in addition to improving water quality
Santa Clara Valley Water District	Residential irrigation system hardware rebate program for residential homes and sites identified as high water users
Solano Irrigation District	SCADA installation to decrease spillage at 8 sites. Estimated to save 3,500 AF/year
Tehama-Colusa Canal Authority	Installation of Doppler devices at existing turnouts. Estimated to save 4,705 AF/year of recoverable flows in addition to improving water quality
Yolo County Flood Control & Water District	Dam gate installation for improved flow control on diversion dams. Estimated to reduce spills and losses by 2,400 AF/year

The MP Region Welcomes Two New Members to the Water Conservation Team

The Water Conservation Team is excited to introduce the newest member of their team, Laurie Sharp. Laurie has served Reclamation for over 6 years and joins the Water Conservation Team as a Support Specialist.

Laurie was born in London during her father's Air Force tour. Her family moved to Sacramento in 1976 where she stayed until 1983 when she married an English native and moved back to London. There, she and her husband ran a very successful pub, featuring "American Cuisine" while welcoming a son and daughter into their family.

Laurie worked for Reclamation prior to a 7 year stint with the U.S. Postal Service as a Customer Service Representative. In 2001, she returned to Reclamation and has learned the ins and outs of the agency serving as the Resources' Division Secretary and more recently as a budget technician. Laurie is delighted to have the opportunity to join the Water Conservation Team and already has proven to be a valuable asset.

In her spare time, Laurie enjoys international travel, skiing and cooking. Laurie can be reached at 916-978-5232 or lsharp@mp.usbr.gov.

The Mid-Pacific Region welcomes Stan Mattingly to the Water Conservation Team. He is serving as a technical specialist, responsible for grant and cooperative agreement programs in the Klamath Basin Office located in Klamath Falls, Oregon.

Prior to his assignment in Klamath Falls, Stan served as a Rio Grande Forest Engineer in Colorado providing engineering input for forest programs such as physical resources, post fire rehabilitation and restoration activities. He also provided leadership for engineering roads, road impact assessments and planning, and trails and fleet management programs. In addition, Stan has worked for the US Federal Highway Administration in New Mexico (FHWA) and served in Reclamation for 19 years before FHWA.

Stan has a BS degree in Civil Engineering from Purdue University with an emphasis in transportation, structures and surveying. During his spare time, Stan enjoys all outdoor activities.

Stan can be reached at 541-880-2559 or smattingly@mp.usbr.gov.

Water Conservation Assistance

The Water Conservation Team will have a meeting room at the Mid-Pacific Region Water Users Conference to provide assistance with Water Management Plans, Annual Updates, and to provide information on available financial assistance programs. The Team will be available January 17-18, 2007; 10:00 am – 12:00 noon and 2:00 pm – 4:00 pm.

Water Conservation Funding Available!

Reclamation's Water Conservation Field Services Program for Fiscal Year 2007 is currently being advertised on www.grants.gov. For more information about this program, please contact your Area Office Water Conservation Specialist or visit http://www.usbr.gov/mp/watershare/.

U.S. Department of the Interior
Bureau of Reclamation

Congratulations to Jerry Townsend!

After 35 years of service, Jerry Townsend has retired. Being a member of the Water Conservation Team since its inception in1993, Jerry was an extremely valuable water conservation resource. Jerry worked in the Fresno, Klamath and Sacramento offices. We thank Jerry for providing superb service during his lifetime career with Reclamation.

Calendar of Events

Mid-Pacific Region Water Users Conference

Sponsored by CVP Water Association
Visalia, CA
January 17-19, 2007

For more information, call 916.448.1638

California Irrigation Institute's 46th Annual Meeting

Double Tree Hotel
Sacramento, California
January 22-23, 2007

For more information, visit
http://www.caii.org/a.html

The Water Education Foundation's 24th Annual Executive Briefing

Sacramento, CA
February 22-23, 2007

For an invitation, please call 916.444.6240

Irrigation District School of Irrigation (For Operators)

ITRC, Cal Poly, San Luis Obispo, CA
January 30 - Flow Measurement (General)
January 31 - Flow Measurement (Pipelines)
February 1 - Canal Operation

For more information, visit http://www.itrc.org/classes/idschirr.htm

Improving Energy Efficiency in Drip Irrigation

Sponsored by Southern California Edison &
ITRC, Cal Poly, San Luis Obispo
AgTAC Center, Tulare, California
February 17 , 2007
9 a.m.—12 p.m.

For more information, visit http://www.itrc.org/classes/drip.htm

Supervisory Control and Data Acquisition

ITRC, Cal Poly, San Luis Obispo, CA
February 20-21 - Beginners
February 22-23 - Advanced Topics

For more information, visit http://www.itrc.org/classes/scada.htm

To feature your events
or programs in our Newsletter,
please contact Sheri Looper
at 916-978-5219.

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Address Correction Requested